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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,865	05/09/2001	Alan D. Crapo	3174-000012	4952

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EXAMINER

CUEVAS, PEDRO J

ART UNIT PAPER NUMBER

2834

DATE MAILED: 10/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.



# Office Action Summary

## Application No.

09/851,865

## Applicant(s)

CRAPO ET AL.

## Examiner

Pedro J. Cuevas

## Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 and 19-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-18, 30 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:



## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of invention set forth in Group II, claims 12-18, 30, and 31 in Paper No. 4 is acknowledged.
2. Claims 1-11 and 19-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4.

### *Specification*

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Reduced Cogging Torque Permanent Magnet Electric Machine With Rotor Having Offset Sections.

### *Claim Rejections - 35 USC § 102*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 12-14, 16, 30, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,397,951 A to Uchida et al.



Uchida et al. clearly teaches the construction of a rotor for a synchronous rotary machine comprising:

a rotor (23); and

a plurality of axial rotor sections (26) defined on a radially outer surface of said rotor,

wherein each of said axial rotor sections include a set of permanent magnets (25) including m magnet poles,

wherein axial rotor sections are rotationally offset and said edges of said permanent magnets define stair step interfaces (Figures 6A, 7, and 8), and

wherein said permanent magnets of said rotor include substantially unmagnetized straight skewed areas (128) aligned with said stair step interfaces having a stair step-like shape with clipping, and include at least m conductor slots.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,397,951 A to Uchida et al. in view of U.S. Patent No. 4,642,502 to Carpenter et al.

Uchida et al. disclose the construction of a rotor for a synchronous rotary machine as described above.



However, it fails to disclose permanent magnets are one of arc magnets and breadloaf magnets.

Carpenter et al. teach the construction of a dynamoelectric machine with permanent magnet and magnet mounting surface arrangement wherein said permanent magnets are one of arc magnets and breadloaf magnets for the purpose of forming a cylindrical surface and a skew angle with the axis corresponding with the rotational offset of the magnet mounting surfaces to define skewed slots between skewed magnetic poles extending the substantial axial length of the core.

It would have been obvious to one skilled in the art at the time the invention was made to use the permanent magnets disclosed by Carpenter et al. on the a rotor for a synchronous rotary machine disclosed by Uchida et al. for the purpose of forming a cylindrical surface and a skew angle with the axis corresponding with the rotational offset of the magnet mounting surfaces to define skewed slots between skewed magnetic poles extending the substantial axial length of the core.

9. With regards to claims 15 and 17, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set:

the first offset angle of said axial rotor sections to be approximately equal to 360 mechanical degrees divided by a least common multiple of a first number of a stator slots of said machine and a second number of rotor poles of said rotor, and divided by a third number of said axial rotor segments; and

the skew angle of a magnetizing fixture to be approximately equal to 360 mechanical degrees divided by the least common multiple of said first number and said



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second number, multiplied by a stack length of said magnetizing fixture, and divided by a stack length of said rotor, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

***Conclusion***

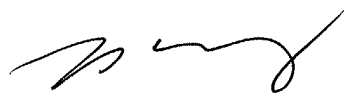
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (703) 308-4904. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pedro J. Cuevas  
October 24, 2002

  
NESTOR RAMIREZ  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800